

## **EXHIBIT B**

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK**

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**In Re: Methyl Tertiary Butyl Ether ("MTBE")  
Products Liability Litigation**

**Master File No. 1:00 – 1898  
MDL 1358 (SAS)**

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**This Document relates to:**

*City of New York v. Amerada Hess  
Corp., et al., 04 Civ. 3417*

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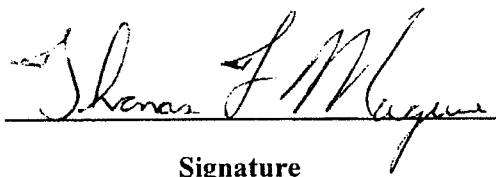
**SUPPLEMENTAL EXPERT REPORT OF**

**THOMAS F. MAGUIRE, PG, LSP, LEP**

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Signature

6-1-09  
Date

## 1.0 INTRODUCTION

This report serves to rebut and/or respond to the City of New York ("City") expert opinions expressed after March 9, 2009, including M. Terry's new "drought simulation" and associated data and opinions. Specifically, Mr. Terry produced the following materials after issuance of my March 9, 2009 report: a) the March 23, 2009 "Expert Rebuttal Report" of David Terry, which included his new "drought simulation"; b) Mr. Terry's electronic modeling files, produced on March 29, 2009; c) Mr. Terry's May 14, 2009 "Memorandum Documenting Corrections to Original Analysis 2"; and d) supplemental electronic modeling files prepared by Mr. Terry and produced on May 14, 2009. This report is, therefore, a supplement to my January 23, 2009 and March 9, 2009 reports.

My qualifications and requisite disclosures are contained in my prior reports and therefore have not been restated here. The opinions expressed below supplement, but do not supercede those provided in my January 23, 2009 and March 9, 2009 reports and are based, in part, upon a review of the above-noted materials. The opinions previously expressed and summarized below are not intended to represent an exhaustive recitation of my analysis in this matter, but rather a summary of the principal opinions I would intend to offer at trial. To this end, I reserve the opportunity to more fully describe, document and clarify these principal opinions as necessary.

## 2.0 OPINIONS

Generally Mr. Terry relies upon two periods to perform his modeling simulations: a) the period 2004 through 2008; and b) 2009 through 2040. The former period (2004 through 2008), affords an opportunity to assess the accuracy and validity of his predictions regarding ground-water elevations and MTBE concentrations in the City's wells. Simply, during the period 2004 through 2008, there are actual water level measurements and actual test results, regarding MTBE concentrations (in both monitoring wells and the City's wells), that can be compared against Mr. Terry's predictions. Mr. Terry then relies upon his 2004 through 2008 simulation to make future predictions regarding MTBE concentrations in the City's wells during the period 2009 through 2040.

Based upon my analysis of the newly produced files and materials supplied by Mr. Terry since March 9, 2009, it is clear that his models, simulations and predictions do not accurately reflect observed (known) conditions in the ground-water system beneath Queens. For example, Mr. Terry's predicted MTBE concentrations during the period 2004 through 2008 (the concentrations he relies upon as an initial condition to make predictions during the period 2009 through 2040), overstate measured MTBE concentrations by orders of magnitude (i.e., 10 to 100 times) and have mean error rates ranging between approximately 42 and 72 percent (depending on the specific model). It is my opinion, to a reasonable degree of scientific certainty, that these errors, (and other described herein), make Mr. Terry's models scientifically unreliable and, in part, for this

reason they cannot accurately predict the future concentration or duration of MTBE in the City's wells during the period 2009 through 2040.

Based upon a review of the above-noted materials produced after my March 9, 2009 report, I offer the following supplemental opinions to a reasonable degree of scientific probability.

1. **The ground-water flow (MODFLOW) models, upon which Mr. Terry bases his MTBE fate and transport analyses, are not adequately calibrated and exhibit an excessive error rate.**

Mr. Terry acknowledged (April 6, 2009 deposition testimony of Terry) that he did not conduct a calibration analysis of his ground-water flow model. Rather, according to Mr. Terry's deposition testimony, he assumed that the model he received from Malcolm Pirnie was adequately calibrated. Moreover, as noted in my March 9, 2009 report, Cohen and Bell indicated that the ground-water flow model was calibrated against 1991 steady state conditions, intended to represent a period from 1990 through 1998. During the period 1990 through 1998 none of the Station 6 wells was pumped and, with limited and transient exceptions, Well 33 also was not pumped during this period. Therefore, the steady state conditions upon which Mr. Terry's ground-water flow model purportedly was calibrated did not consider the actual pumping of the wells at Station 6 (i.e., Wells 6, 6A, 6B, 6D and 33). This is also true of certain of the Defendant's focus wells. Specifically, minimal, if any, pumping was conducted in Wells 22, 26 and 39 during the period 1990 through 1998. Well 45 was pumped episodically during the period 1990 through 1998, while Well 5 was pumped continuously, but at variable rates, from 1990 through February 2007.

To evaluate the fidelity of Mr. Terry's ground-water flow model during the period 2004 through 2008, Mr. Terry's simulated heads were compared with actual ground-water levels taken from USGS monitoring wells located within his model domain. Specifically, USGS wells located proximal to Station 6 and completed in the Upper Glacial, Jameco, Magothy and Lloyd Aquifers were considered. A summary of these calibration statistics is provided in Table 1. As summarized in Table 1, the maximum and minimum residuals from this data set are +13.82 feet and -3.59 feet, respectively. The residual mean was +4.6 feet and the mean error was 20.8 percent. Simply, when Mr. Terry's predictions were compared against actual measured ground-water levels in USGS monitoring wells, the error rate was more than 20 percent.

In addition to an excessive error rate, Figure 1 indicates that there is a spatial bias in Mr. Terry's residual heads. Simply, the differences between the simulated and measured ground-water elevations are not uniform across the area surrounding Station 6. Based upon these data/observations, it is my opinion that Mr. Terry's ground-water flow model does not accurately predict measured ground-water elevations and hydraulic gradients in the aquifers beneath Queens County during the period 2004 to 2008. The model's inability to accurately predict known ground-water conditions (irrespective of other errors in Mr. Terry's fate and transport (MT3D)

**8. Historical water quality data from Station 6 supply wells, regional ground-water quality data from USGS monitoring wells and NYSDEC file materials, indicate that a localized source is most likely responsible for the prior MTBE impact in Station 6 wells.**

A local LUST site or sites, including: a) the Citgo station at 105-15 Merrick Boulevard; b) the Atlas/SNL Car facility at 108-46 Merrick Boulevard; and/or c) the BP-Amoco station at 165-25 Liberty Avenue, are, more likely than not, the source for prior detections of MTBE in Station 6 wells. Data supporting a local rather than regional source for the historic detections of MTBE in Station 6 wells include the following:

- The temporal correspondence between the pumping of Station 6 wells in conjunction with 2002/2003 pilot testing and the reported detection of historical maximum MTBE concentrations.
- Declining MTBE concentrations when the wells were not subjected to a sustained period of pumping. These data indicate that the source or sources are not located directly upgradient but rather transverse relative to the location of Station 6 wells.
- The spatially discrete nature of elevated MTBE concentrations in Station 6 wells. Although all wells 6, 6A, 6B and 6D were pumped in conjunction with the 2002/2003 pilot test, reported MTBE concentrations were substantially higher in well 6D. Specifically the maximum reported MTBE concentration in Well 6D was 350 ug/L. In comparison, the maximum reported MTBE concentration during the same period of time in Wells 6, 6A or 6B was 8.9 ug/L in Well 6A.
- The absence of data supporting regionally elevated MTBE concentrations (as suggested by Mr. Terry's conceptual site model and numerical transport simulations) in the area surrounding Station 6 wells.
- Although additional pumping of Station 6 wells has been conducted in 2006/2007, reported MTBE concentrations in these wells have declined from maximums observed during the 2002/2003 pilot testing

These data, in conjunction with declining or currently non-detectable MTBE concentrations at the three above-noted service station sites, indicate that the future threat of detecting elevated MTBE concentrations in Station 6 wells, when pumping is anticipated to start (i.e., 2016 or later), is decreasing with time. Moreover, to the extent one or more of these sites was responsible for prior detections of MTBE in Station 6 wells, the transient nature of MTBE's occurrence at the source sites (either as a result of natural attenuation or site cleanup) does not support the persistence (for more than 30 years) of MTBE in Station 6 wells as predicted by Mr. Terry.